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Stress Among Package Truck Drivers

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In 1992, a cross-sectional questionnaire study of package truck drivers in one company was conducted at four widely scattered sites throughout the US; 317 drivers participated, representing 82% of those eligible. The package truck drivers scored significantly above the US working population comparison norm on all summary and individual scales derived from the SCL 90-R, indicating a substantial increase in psychologic distress for this group. The Global Severity Index, the best single summary measure of psychological distress in the SCL 90-R, revealed a mean T score for the drivers of 64.20, 91st percentile of the normative population. The group perceived significantly more daily stressful events than the average working adult, and their sensitivity to these events was also increased. Role overload, a component of the Occupational Stress Inventory, was the most consistent factor associated with symptoms of psychological distress on multiple regression analysis. This study suggests that job stress is a psychological health hazard for these drivers. Am. J. Ind. Med. 31:202–210, 1997. © *1997 Wiley-Liss, Inc.*

KEY WORDS: occupational stress; truck drivers; package delivery; psychological; MMPI

INTRODUCTION

Stress is a dynamic condition consisting of a unique set of emotional, intellectual, and physiological responses to a stimulus. This stimulus, or stressor, can be a constraint, a demand, or even an opportunity, which is perceived by an individual to have a potentially important, though uncertain outcome [Robbins, 1991]. Occupational stress is the sum of all factors in a workplace which elicit a stress response in an individual. It has been further defined as a perceived imbalance between occupational demands and the individual's ability to perform when the consequences of failure are thought to be important [McLean, 1980].

In a review, Beehr and Newman [1978] concluded that job stress may be defined as the interaction of working conditions with traits in the worker causing changes in the employee's psychological state, physiological health, or both. Certain working conditions appear to pose particularly stressful conditions to workers, most notably excessive job demands for the time allotted (role overload). Role overload may be quantitative (job demands exceed the workers capacity) or qualitative (work is too complex or difficult). Job stress is also produced when there is inadequate allocation of normally expected work benefits (e.g., salary, promotion opportunities) [Caplan, et al., 1975].

Stress exerts effects throughout the psyche and soma. Stressful stimuli engage the sympathetic nervous system's fight-or-flight response, neuroendocrine secretion of adrenal corticosteroids, and consequent cardiovascular, hypertensive, gastrointestinal, and immune system impairments. Stress-mediated immune system dysfunction may predispose the individual to types of arthritis, cancer, and diseases with autoimmune components [Plaut and Friedman, 1981]. The psychological end result of chronic workplace stress is

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often termed "job burnout," with symptoms of depleted energy, lowered resistance to disease, increased job dissatisfaction, absenteeism and inefficiency [Veniga and Spradley, 1981].

Mental disorders documented to be associated with job stress include anxiety, depression, and other mood disorders. Maladaptive behavioral and lifestyle patterns, chemical dependencies, alcohol abuse, and sleep disorders may also develop [Sauter et al.; 1990; Cahill, 1990]. Stress has been associated with hyperacidity and peptic ulcer formation, as well as other pathological gastrointestinal conditions [Holtmann et al. 1990; Peters and Richardson, 1983]. Exacerbation of respiratory disorders, most prominently, asthma, has long been associated with stress, a relationship recently confirmed by laboratory evaluation [Kotes et al., 1989].

High psychological job demands combined with low work control have recently been shown by researchers to affect smoking habits [Green, 1990]. The detrimental effects of increasing cigarette intake are well known, including lung and heart disease as well as cancer.

Stress has been shown to directly affect the cardiovascular system through its influences on blood pressure, cholesterol levels, and myocardial blood supply [Rosengren et al., 1991]. Swedish men with high job demands, low intellectual discretion with respect to job tasks, and a low degree of freedom in personal scheduling at work have been found to develop coronary artery disease at elevated rates [Kasarek et al., 1981].

A 1990 study of mail handlers employed by the US postal service, based on a sample of 4,018 survey questionnaires returned from a mailing of 11,000, reported that postal workers suffered higher levels of psychological job demands than the reference population [Cahill, 1990]. The author further noted lower levels of decision authority, higher scores on a job strain scale, lower levels of supervisory support, higher levels of physical and psychological stress symptoms, and higher levels of sleeping problems. Among these postal workers, Vietnam veterans reported especially high levels of stress-related symptoms.

BACKGROUND

In 1992, package truck drivers employed by an international delivery company reported to their union that they had a variety of symptoms and diseases which they felt were quite possibly related to the stress of their jobs. They further reported frequent "burn out" phenomena among their fellow workers.

The drivers complained of a punitive attitude from front-line supervisors, daily supervisory pressure to work more hours and through lunch, stressful supervisory presence in the trucks on the routes, and pressure on replacement drivers to outperform those on sick leave or vacation. They reported conflicting expectations emanating from differing supervisors and a disciplinary system in which they were "judged guilty, and sentenced, before trial." Finally, the drivers reported a stressful social environment at work fostered by a perceived lack of social support from supervisory personnel.

Later that year, their union contracted with the Illinois Health Hazard Evaluation (HHE) program to investigate occupational stress among package truck drivers they represented. The HHE program is a collaborative activity of the Illinois Department of Public Health Division of Environmental Health and the University of Illinois at Chicago Occupational Health and Safety Center. Its mission is to provide impartial scientific evaluations of unique health hazards in industry or the community.

OBJECTIVES

The primary objective of this investigation was to determine the prevalence of psychological distress symptoms among a representative sample of the package truck drivers from the company and to compare that with the US population. Further, it would attempt to identify the type of job demands associated with these stress reactions.

MATERIALS AND METHODS

Research Team

To conduct this study, a team of health professionals from the University of Illinois at Chicago, Cook County Hospital, and Rush-Presbyterian St. Luke's Medical Center was assembled, consisting of occupational medicine physicians, a psychologist, a biostatistician, a registered nurse, and several research assistants. An outside review committee was also assembled, consisting of nationally recognized experts in the field of occupational medicine and stress, to review and comment on methodological issues and the interpretation of results.

Study Population

The participants for this study were the package truck drivers working out of company distribution centers in New Jersey, Wisconsin, Texas, and California. These sites were selected in consultation with representatives from the union to reflect the national population of company package truck drivers and for logistical reasons involving cost, local cooperation, and geographic heterogeneity. As the company was known for its uniformity of practices throughout the system, especially as related to the delivery process, this sample should reflect company-wide conditions. Drivers were recruited for the study by local union officials through announcements, flyers, letters, individual telephone calls, and in-person reminders on the day the survey was adminis-

tered. They were informed that the purpose of the project was to assess the health effects of their work. Participants were assured of the confidentiality of their responses, that all data would be held at the University of Illinois at Chicago, and that neither management nor the union would have access to information which would allow the identification of individuals.

Testing Procedure

In New Jersey, Wisconsin, and Texas the questionnaires were administered after the work shift at a conveniently located hotel conference room. For those drivers unable to attend the evening session, another session was held the following morning before the work shift. In California, the questionnaire was administered one time only on a Saturday at the union hall. At all sites the standardized forms were distributed by researchers from the HHE study team, who remained present throughout the session to distribute and collect the survey questionnaires and to field problems or questions.

Survey Instruments

Participants completed a survey package which consisted of six self-administered questionnaires. The Symptom Checklist 90-R (SCL 90-R) is a 90-item symptom questionnaire which reflects problems of psychological and psychosomatic origin. Subject responses are scored with regard to nine symptom constellations: somatization (SOM), obsessive-compulsive (OC), interpersonal sensitivity (INT), depression (DEP), anxiety (ANX), hostility (HOS), phobic anxiety (PHOB), paranoid ideation (PAR), and psychoticism (PSY). Three indices of perceived distress are also scored: a global severity index (GSI), positive symptom distress index (PSDI), and positive symptom total (PST). The test is designed to detect psychiatric symptomatology in apparently normal people. Normative data were drawn from almost 1,000 individuals, 493 males and 480 females, representing a stratified random sample from a diverse county in a large eastern state: 11.6% of the sample were African-American and 84.6% single. [Derogatis, et. al., 1979].

The Daily Stress Inventory (DSI) is an assessment of the individual's ability to cope with normal daily events. The DSI yields three measures of reaction to daily stresses — perceived stress frequency (Event), reaction to these events in aggregate (Impact), and an average event reaction (I/E). Normative data for this instrument were based on 473 non-student adults living in a community around a large state university in the southeastern United States. Of this group, 152 were male, 71 African-American, 192 single, 222 college educated: 36 were professionals/executives, and 106 were managerial [Brantley, PJ, 1987].

The Occupational Stress Inventory (OSI) surveys three domains of occupational adjustment: factors causing occupational stress, resultant psychological strain, and coping resources. It assesses occupational stressors, including the individual's perception of the physical environment (PE), responsibility (R), role ambiguity (RA), role boundary (RB), role insufficiency (RI), and role overload (RO). Its scales identifying the effects of these stressors include interpersonal strain (IS), physical strain (PH), psychological strain (PS), and vocational strain (VC). Coping resource scales include rational/cognitive (RC), recreation (RE), self-care (SC), and social supports (SS). The comparative standardizing information was developed by these researchers and based upon a population from approximately 150 (primarily) white-collar occupations [Osipow and Spokane, 1987].

In order to assess the validity of the responses, the F Scale from the Minnesota Multiphasic Personality Inventory (MMPI-2) was used as an index of exaggerated responses. This scale allowed the identification of subjects who might wish to create an exaggerated negative self-presentation. The K Scale, also from the MMPI-2, was used to identify whether the responders were defensive about revealing symptoms. The Shipley Institute of Living vocabulary test was administered to asses the level of education and the effect of facility with English on the results.

A checklist format was designed to record demographic, social, and health information. Length of employment with the company, age, sex, racial/ethnic background, years of schooling, number of packages delivered on an average day, number of miles covered on an average day, living environment (alone, with family, etc.), psychoactive medication/alcohol use, marital status, injuries on the job, physical pain on the job, and loyalty to union/management were all recorded.

Bias

As with any study based upon questionnaire responses, and which is sponsored by an interested party (e.g., union or management), the present study is subject to biases and pressures to produce an outcome favorable to that sponsoring body. Several measures were taken to reduce this bias. All data were collected and kept confidential by researchers at the University of Illinois at Chicago. Full freedom of publication was established with the union before the project began. The questionnaires were distributed and collected at the time of the test only and under the control of the researchers. The survey instrument questionnaires were far too complicated to allow for advanced provision of the "correct" answers. Though it is possible that non-participants in the study had no significant stress-related symptoms, which could have led to elevated mean levels of stress in the group, the high participation rate (82%) mitigated against this influencing the results. Company records were

reviewed and copies kept by the researchers, assuring that the potential study population was accurately identified. The data were treated conservatively by eliminating all those rated as "marked over-responders" on the MMPI F scale.

Statistical Analysis

Mean scale values were standardized according to specific methods for each survey instrument and reported as T scores. For the general population, the standardized mean T value is 50. Again, using data provided with the questionnaire instruments, a T score of 60 corresponds to the 84th percentile, and of 70 to the 98th percentile of the general population. Student's t-test was used to determine whether the observed mean T scores were significantly different than the population mean T scores of 50. Results were declared statistically significant if the P-value for the test was less than 0.05.

Regression analysis was performed using all respondents with complete independent and dependent variable vectors. For each of the ten dependent variables, a parsimonious multiple regression model was developed with the backward elimination method for variable selection, with the constraint that F scale, recreation (RE), self-care (SC), social supports (SS), rational/cognitive (RC), vocabulary score (VSCORE), and use of alcohol (DRINK) were forced to be included in the model. The candidate independent variables used for consideration in the selection algorithm were the main effects for physical environment (PE), responsibility (R), role ambiguity (RA), role boundary (RB), role insufficiency (RI), role overload (RO), years at this job, average number of packages per day, average number of miles per day, loyalty to the employer, and loyalty to the union.

RESULTS

Participation Rate

According to the company seniority, scheduling, or currency envelope lists (used to record cash payments) provided by the local union officials at each site, a total of 438 of the company's package truck drivers were eligible for participation in this study. After eliminating drivers who could not be contacted or were unable to attend the session because of short- or long-term physical illness requiring bed rest or hospitalization, non-package truck driver assignment, or pre-arranged plans to travel out of town, 388 drivers were available for participation. From all centers, 317 drivers participated, representing 82% of those eligible. The center specific rates varied from 69% in Texas to 90% in Wisconsin.

Internal Validity Tests

Fourteen individuals filled out questionnaires with F scales above 16, indicating marked over-reporting of symptoms. These individuals were eliminated from further analysis, except to determine that they did not fall uniquely within any demographic category. This left 303 valid responders.

The Daily Stress Inventory posed a different problem, due to an apparent misunderstanding of the instructions in the first two centers, Wisconsin and California. The participant was directed to rank the stress level experience only if a listed situation had occurred to the individual in the 24 hours prior to taking the test. For 92 subjects, all 58 items in the inventory were answered with assigned stress levels, suggesting that the subjects misunderstood the instructions. Therefore, all DSI questionnaires for which every item was ranked were eliminated from the analysis, leaving 211 survey responses available for DSI interpretation.

The Occupational Stress Inventory had some questions that were not answered by some subjects. Rather than assuming a mid-level response for each unanswered question, the sub-scale that contained the question which was not answered by the subject was eliminated from analysis for that subject. The number of completed scale responses ranged from a low of 287 on the Interpersonal Strain scale to 300 on the Role Insufficiency, Psychologic Strain, and Responsibility scales.

The F scale mean was 5.59, including those individuals scoring above 16. This value is well within the normal range, which covers all responses below 7. With the removal of the 14 marked over-responders, the mean for the F scale was 5.01 with a standard deviation of 3.39.

The K scale response yielded a mean raw score of 14.09 with a 5.54 standard deviation. This corresponds to a T value of 47 within the normal range of 46 to 55.

The number of correct responses on the Shipley Institute of Living Vocabulary test ranged from 7 to 39 out of a total 40 possible correct responses. The mean number of correct responses was 30 with a standard deviation of 5.3. This would indicate a slightly below average vocabulary for this group when compared to the standard US population.

Sample Population Characteristics

There were 303 package delivery workers who participated in this study. Summary characteristics of the sample are displayed in Table I. The sample is mostly male (95%), white (84%), having either high school or college education (99%). A large majority are married (72%) and living with their spouse or family (82%). The majority (61%) indicate they do not consume alcohol on a daily basis, and only a small number use medications for nervousness (1%), or to help with relaxation (6%) or sleep (3%). Many respondents indicate that they experience pain in the back (73%), the leg

TABLE I. Demographics of Package Truck Drivers Surveyed, 1992*

Sample size	303		Medication use		
Gender			For nervousness	3	1%
Male	285	95%	To help relax	18	6%
Female	16	5%	To help sleep	9	3%
Race			Daily alcohol consumption		
White	248	84%	None	184	62%
African-American	30	10%	1–3 drinks	106	35%
Hispanic	11	4%	4+ drinks	9	3%
American Indian	5	2%	Reported sites of pain		
Asian-American	3	1%	Back	221	73%
Education			Leg or foot	135	46%
Some high school	3	1%	Arm or hand	103	34%
High school	106	35%	Reported job-related injury		
Some college	141	46%	Back	83	28%
College	51	17%	Leg or foot	62	20%
Post-college	1	0%	Arm or hand	44	15%
Marital status			Other (unspecified)	23	8%
Single	56	18%	Employer loyalty		
Married	217	72%	Very strong	43	14%
Divorced	28	9%	Strong	96	32%
Widowed	1	1%	Average	125	42%
Living arrangement			Weak	37	12%
Spouse/family	247	82%	Union loyalty		
Alone	32	11%	Very strong	81	27%
Non-related partners	24	8%	Strong	115	38%
Number of children			Average	91	30%
0	113	37%	Weak	14	5%
1	69	23%			
2	80	26%			
≥3	41	14%			

*All statistically significantly different from the normative population.

or foot (46%), and the arm or hand (34%). They also report some occurrences of job-related injuries in the back (28%), the leg or foot (20%), and the arm or hand (15%). Their stated loyalty to their employer is either "average" or "strong" for 74% of the respondents; their loyalty to their union is either "average" or "strong" for 68%.

Where differences between centers in these characteristics existed they were modest. There are somewhat more African-Americans at the New Jersey and Texas centers, the level of education completed was somewhat lower in New Jersey, and somewhat more respondents were married in Wisconsin. It appears that more respondents from California and Wisconsin reported arm or hand pain, while fewer Texas workers reported back pain. Job-related injuries of the back are reported more frequently among California workers (48%), and much less frequently among Texas workers (15%), while the workers from Wisconsin and New Jersey report middle range rates of such injuries (25% and 27%, respectively). Finally, while the loyalty to their union is usually "average" or "strong" at the California and Wisconsin centers, the workers at the New Jersey and Texas centers report increase levels of both "weak" and "very strong" loyalty.

Symptoms

Table II displays summary statistics from the various measured symptom scales for the study respondents. For all of these scales, the package truck driver means were significantly different than the mean for the comparison normative population. These were statistically significant with $p < 0.0001$, except for "DSI reaction to daily stressors" ($p = 0.0095$) and "OSI: recreation" ($p = 0.0071$). While the mean responses for the last five items listed on the OSI (responsibility for well-being of others, recreation, attention to self-care, social support, and rational/cognitive)

TABLE II. Summary Measures for Psychological Stress Scales and Sub-scales Among Package Truck Drivers Surveyed in 1992

	Mean T score	S.D.	Min	Max	Percentile
A. SCL 90-R (n = 303)					
Global severity index (GSI)	64.2	11.0	34	81	91
Positive symptom distress (PSDI)	58.5	8.4	38	81	77
Positive symptom total (PST)	62.6	11.2	0	81	88
Somatization (SOM)	64.8	9.7	37	81	91
Obsessive-compulsive (OC)	61.4	11.0	37	81	85
Interpersonal sensitivity (INT)	61.6	11.2	41	81	86
Depression (DEP)	62.4	10.7	38	81	87
Anxiety (ANX)	61.0	11.4	37	81	84
Hostility (HOS)	61.7	11.2	41	81	86
Phobic anxiety (PHOB)	54.7	9.5	44	81	66
Paranoid ideas (PAR)	62.5	11.0	41	81	87
Psychoticism (PSY)	60.3	11.2	44	81	82
B. Daily Stress Inventory (n = 211)					
Reaction to stressors (Impact/Event)	51.8	10.2	24	74	54
Stressor frequency (Event)	56.8	9.7	33	74	69
Sensitivity to events (Impact)	55.2	9.3	32	74	67
C. Occupational Stress Inventory					
Interpersonal strain (IS)	54.5	10.5	31	95	65
Physical strain (PH)	58.7	12.5	38	99	76
Psychological strain (PS)	55.0	11.0	36	89	66
Vocational strain (VS)	60.5	13.2	33	99	83
Role overload (RO)	54.9	8.4	24	74	66
Role insufficiency (RI)	60.0	10.0	32	87	82
Role ambiguity (RA)	58.7	11.4	32	92	78
Role boundary (RB)	64.6	10.3	37	97	91
Physical environment (PE)	82.5	14.3	41	99	99
Responsibility for well-being of others (R)	43.2	9.9	25	82	20
Recreation (RE)	48.3	11.0	23	84	4
Attention to self care (SC)	46.1	10.4	22	86	33
Social support (SS)	47.2	10.8	12	63	36
Rational/cognitive (RC)	45.1	11.3	15	72	29

are all significantly lower than the general population mean, all of the other scale means were significantly higher than the corresponding general population means.

Regression Analysis

Table III displays the regression coefficients and p-values for the individual terms in each of the ten final models. Since multiple regression models were used here, the p-value for a particular variable in a model should be interpreted as reflecting the importance of the association of that particular variable with the response after removing the effects on the response for each of the other included variables. Such inferences are said to be "conditional inferences," i.e., conditional on what else has been included in the model.

Each column of the table corresponds to the model for a separate dependent (i.e., response) variable. Within a column, entries of "—" indicate that the variable did not contribute significant additional information for explaining the variability of the dependent variable.

From Table III, it is clear that Role Overload is a strong predictor for all of the independent variables except the number of events in the daily stress inventory. Responsibility also is an important predictor in most of the models. Other independent variables are deemed at least marginally significant predictors for some of the responses, but no other extremely strong patterns are apparent.

TABLE III. Multiple Regression Analysis of Occupational and Personal Variables Examined in a Survey of Package Truck Drivers in 1992

	Global severity index	Positive symptom distress	Positive symptom total	Interpersonal sensitivity	PHS	PSY	VS	Event	Impact	Ratio
R^2	0.4906	0.3437	0.4067	0.3831	0.4880	0.4878	0.5082	0.1742	0.2515	0.2481
FSCALE	1.19[1]	0.916	0.887	1.126	0.719	0.656	0.300	0.811	0.889	0.449
	<0.001[2]	<0.001	<0.001	<0.001	<0.001	<0.001	0.116	<0.001	<0.001	0.046
RE	−0.033	0.015	−0.023	0.059	0.006	−0.031	0.098	−0.049	−0.142	−0.269
	0.57	0.761	0.714	0.356	0.922	0.590	0.158	0.537	0.044	0.001
SC	−0.079	−0.116	−0.071	−0.084	−0.622	−0.095	−0.088	0.098	0.037	−0.031
	0.21	0.031	0.302	0.220	<0.001	0.125	0.230	0.236	0.041	0.709
SS	−0.066	−0.021	−0.049	−0.106	0.043	−0.124	−0.013	0.067	0.112	0.073
	0.22	0.648	0.412	0.073	0.475	0.021	0.842	0.352	0.080	0.312
RC	−0.022	0.084	−0.101	−0.060	−0.081	−0.087	−0.154	0.083	0.073	0.043
	0.68	0.065	0.086	0.303	0.171	0.113	0.018	0.229	0.245	0.540
VSCORE	0.268	0.235	0.266	0.372	0.048	0.076	−0.234	−0.065	0.002	0.127
	0.008	0.006	0.018	0.001	0.671	0.448	0.052	0.630	0.984	0.352
Drink	1.192	0.481	0.907	0.309	0.138	−0.083	−0.362	1.066	1.048	0.518
	0.010	0.226	0.076	0.544	0.789	0.855	0.502	0.080	0.056	0.399
PE	—	—	—	—	0.108	0.105	0.085	−0.123	−1.118	—
					0.018	0.009	0.070	0.017	0.018	
R	0.147	—	0.188	0.149	0.262	0.266	0.220	—	—	0.130
	0.011		0.004	0.020	<0.001	<0.001	0.001			0.091
RA	—	—	—	—	—	0.108	0.139	—	—	—
						0.036	0.026			
RB	—	0.142	—	—	—	—	—	0.232	0.180	—
		0.005						0.003	0.012	
RI	—	—	—	—	—	—	0.389	—	—	—
							<0.001			
RO	0.397	0.204	0.378	0.319	0.455	0.235	0.325	—	0.186	0.261
	<0.001	0.001	<0.001	<0.001	<0.001	0.001	<0.001		0.039	0.003
Yrs. worked	—	−0.130	—	—	—	—	—	—	—	—
		0.049								
Number pkg./day	—	−0.004	—	—	—	—	—	0.008	—	−0.007
		0.040						0.076		0.044
Miles	−0.021	—	—	—	—	—	−0.025	—	—	−0.034
	0.075						0.069			0.046
Empl. loyal	−1.207	—	−1.488	−1.292	—	−1.015	−1.780	—	—	—
	0.042		0.025	0.049		0.088	0.014			
Union loyal	—	—	—	—	—	—	—	—	—	—

[1]Coefficient.
[2]*p* value.

DISCUSSION AND CONCLUSIONS

Stress Is a Health Hazard for These Package Truck Drivers

Each psychological symptom scale of the SCL 90-R, the Occupational Stress Inventory, and the Daily Stress Inventory indicated a consistently significant and substantial elevation of stress-related symptoms over what is expected in the general adult population. In fact, for the best single scale of psychological distress, the mean Global Stress Index from the SCL 90-R, was at the 91st percentile, indicating that many of these workers are substantially more stressed than average working adults in the United States. These

results are consistent with the higher scores on the job strain scale and higher levels of physical and psychological stress reported by Cahill in her 1990 survey of postal workers.

Job Characteristics Known to Cause Stress are Present in Significantly Greater Frequency for Package Truck Drivers Than for the General Working Population

The study group reported higher levels of role overload, role insufficiency, role ambiguity, role boundary problems, and physical environments than would be expected when compared to the general working population. Based on the review of multiple regression modeling of our results, role overload is consistently and strongly related to worker stress levels. Components of role overload include the perception that work load is unreasonable and unsupported by employer resources. Working under "rigid deadlines," and perceiving oneself to be "incompetent to perform the job" are factors tapped by this scale

The results of this study suggest not only that the workers show generally elevated levels of stress relative to the rest of the working population, but that particular aspects of the company work environment are related to the variability in stress-related symptoms. It appears that job role overload in particular is related to several stress-related symptoms in these workers. Anecdotal descriptions given by workers suggest management practices at the company may contribute to worker symptoms, but this study is not designed to identify the job attributes that are particular stressors. Further research is necessary to identify the specific changes needed to reduce the stress level among these drivers.

These findings are consistent as well with the survey by Cahill in 1990. She reported higher levels of psychological job demands, lower levels of decision authority or autonomy, and lower levels of supervisory support for the 4,018 mail handlers who responded to her survey.

These Occupational Stressors May Affect Package Truck Drivers During Off Hours as Well

The consistent elevations of the Daily Stress Inventory scales and the below norm results for the Rational/Cognitive scale of the Occupational Stress Inventory indicate that these work stresses affect the responses of these employees to activities of daily living. Several of the SCL 90-R scales, and the Psychological and Interpersonal Strain scales of the OSI instrument, indicate the global effects of this stress on the personality and behavior of these employees.

RECOMMENDATIONS

Based on the general recommendations of the National Institute for Occupational Safety and Health [Sauter, 1990], the initial results of this study, and discussions with the employees themselves, it is recommended that a company-wide approach to studying and reducing workplace stress for package truck drivers be undertaken. Renewed attention to this vital area should emphasize the correction of those aspects of this job which have been identified in the literature, by NIOSH, and in this study to contribute to psychological distress. A system should be devised to enable the use of health, disability, and workers' compensation data in the on-going surveillance of the effects of the workplace on the worker's health and quality of life.

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